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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,101	03/02/2004	Shimshon Gottesfeld	107044-0043	2480

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EXAMINER	
CANTELMO, GREGG	
ART UNIT	**PAPER NUMBER**
1745	

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05/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/791,101	GOTTESFELD ET AL.	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *7-11 and 15-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 12-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/22/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-6 and 12-14 in the reply filed on March 9, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 7-11 and 15-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 9, 2007.

Information Disclosure Statement

2. The information disclosure statement filed July 22, 2004 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

3. The drawings received July 29, 2004 are acceptable for examination purposes.

Specification

4. The disclosure is objected to because of the following informalities: at least one of the related applications listed in the specification have since matured into a U.S. patent and the status these applications should be updated. Appropriate correction is required.

Claim Objections

5. Claim 6 is objected to because of the following informalities: Claim 6, as written, is potentially misleading. The claim is worded such that it can be read in two ways. First, where the layer expands from at least one of hydration, exposure to fuel and exposure to heat and second, where the layer expands to impart compression upon at least one of the following of hydration, exposure to fuel and exposure to heat. It appears that the former is correct while the latter is not conceived. For purposes of clarity Applicant is advised to rephrase claim 6 to further clarify the specific relationship defined therein. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 3 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a range of compressive pressures, does not reasonably provide enablement for the infinite range of compression greater than about 100 psi. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The claims encompass all pressures greater than about 100 psi which unduly extends beyond the scope of that which the instant application is entitled to. The claimed and disclosed fuel cell materials have inherent limitations therein which depending on the severity of the compressive force would damage the fuel cell and render it inoperative. Neither the claims nor the specification provide

reasonable enablement for a range of values which were appreciated as being defining of the claimed compression and the claimed invention cannot reasonably permit recitation of the open-ended and infinite upper value of the claimed compressive force.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The term "effective" in claim 4 is a relative term which renders the claim indefinite. The term "effective" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Neither the claims nor the specification clearly define what degrees of water management were appreciated by the claimed invention as being "effective water management";

b. Claim 13 fails to further define the fuel cell of claim 1 but rather is an intended use or application of the fuel cell. Attaching the fuel cell to an article of clothing fails to clearly include further limitations to the fuel cell of claim 1 and thus is unclear how it limits the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 4, 5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,127,058 (Pratt).

Pratt discloses a conformable fuel cell in Fig. 4, comprising: (A) a membrane electrolyte intimately interfacing with a catalyst layer along each of the membrane's major surfaces being a catalyzed membrane electrolyte, having an anode aspect and a cathode aspect, and which catalyzed membrane electrolyte is flexible (e.g., conformable to a desired shape); (B) diffusion layers sandwiching said catalyzed membrane electrolyte, said diffusion layers being comprised of materials that are conformable; (C) flexible current collectors coupled with each of said anode aspect and said cathode aspect of said membrane electrolyte; (D) fuel delivery means coupled with said anode aspect of said membrane electrolyte that delivers fuel substantially uniformly to said anode aspect while said fuel cell maintains said desired shape (Figs. 2-5); (E) electrical coupling 45 disposed across said anode aspect and said cathode aspect and having means for connection to an application device being powered by said fuel cell (as applied to claim 1).

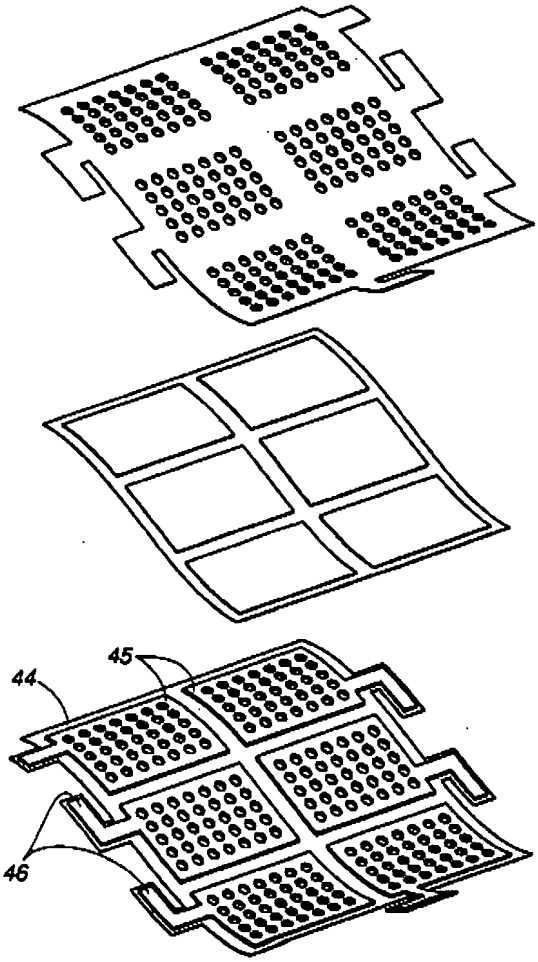


FIG. 4

The current collectors 45 at each of said anode aspect and said cathode aspect apply "adequate compression" effectively over the active area of the membrane electrolyte of each cell (Fig. 4 as applied to claim 2)

The conformable fuel cell includes a degree of water management therein and absent any definition of the term "effective water management" is broadly held to be

exemplary of the claimed "effective water management" (see col. 3, ll. 25-30 as applied to claim 4).

The fuel is at least one of a vapor, gel, liquid or combination thereof and by example is hydrogen gas (sentence bridging columns 4 and 5 as applied to claim 5).

The fuel cell in Fig. 4 is shaped to form a curvilinear shape (col. 5, ll. 25-28 as applied to claim 12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent No. 6,045,575 (Rosen).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 13 and Pratt is that Pratt does not teach of mechanically attaching the fuel cell to an article of clothing.

Rosen discloses an article of clothing wherein a fuel cell is mechanically attached to the article to power the electronic light array disposed on the article (Figs. 1a-1c; col. 3, ll. 1-5; col. 6, ll. 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by mechanically fastening the fuel cell to an article of clothing which requires a power source as taught by Rosen since the combination reasonably would lead one of ordinary skill in the art to arrive at this combination and since the selection of the fuel cell system of Pratt to a particular load is relative to the intended use of the fuel cell.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen in view of either Pratt or U.S. Patent No. 6,620,542 (Pan).

Rosen discloses an article of clothing wherein a fuel cell is mechanically attached to the article to power the electronic light array disposed on the article (Figs. 1a-1c; col. 3, ll. 1-5; col. 6, ll. 1-10).

Rosen does not teach of the particulars of the fuel cell.

Pratt teaches of a conformable fuel cell system as shown in Fig. 4.

Pan also teaches of a flexible fuel cell system in Fig. 2 and 3 comprising: (A) a membrane electrolyte intimately interfacing with a catalyst layer along each of the membrane's major surfaces being a catalyzed membrane electrolyte, having an anode aspect and a cathode aspect, and which catalyzed membrane electrolyte is flexible (e.g., conformable to a desired shape); (B) diffusion layers sandwiching said catalyzed membrane electrolyte, said diffusion layers being comprised of materials that are conformable; (C) flexible current collectors coupled with each of said anode aspect and said cathode aspect of said membrane electrolyte; (D) fuel delivery means coupled with said anode aspect of said membrane electrolyte that delivers fuel substantially uniformly to said anode aspect while said fuel cell maintains said desired shape; (E) electrical coupling disposed across said anode aspect and said cathode aspect and having means for connection to an application device being powered by said fuel cell (as applied to claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosen by using the flexible fuel cell configurations of either Pratt or Pan since it would have provided a suitable

conformable fuel cell power source for use in the article of clothing of Rosen thereby providing a flexible power source to the flexible article of clothing of Rosen.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of either JP 02-234358 (JP '358) or U.S. Patent No. 6,268,077 (Kelley).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 14 and Pratt is that Pratt does not teach of providing fuel to the fuel cell from a detachable conduit that connects to the anode side of the fuel cell.

JP '358 discloses providing a detachable conduit that connects to the anode side of the fuel cell (abstract and Figs. 1, 6 and 7). Kelley discloses a similar configuration wherein fuel is provided to the anode via a fuel cartridge (Figs. 1 and 3)

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by providing a detachable conduit that connects to the anode side of the fuel cell as taught by either JP '358 is that it would have provided a way to provide fuel to the fuel cell and to permit replacing the fuel or introducing additional fuel to the fuel cell system as needed. In addition has become well known in the art to employ fuel cartridges or cassettes to a fuel cell having a receiving conduit therein in portable electronic devices so as to provide a superior power source to the portable electronic devices while providing a way to re-fuel these power sources when needed.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent Application Publication No. 2001/0041281 (Wilkinson).

The teachings of claim 1 have been discussed above and are incorporated herein.

While not expressly recited, the fuel cell system of Pratt requires an inherent degree of compressive force therein in order to impart the requisite physical contact between the various layers in the fuel cell so as to provide for the conductive properties of the fuel cell itself.

The difference between claim 3 and Pratt is that Pratt does not teach of compressing the active area at a pressure which is equal to or greater than about 100 psi.

Wilkinson teaches that a fuel cell assembly is typically compressed (for example, at about 70 psi overall) to ensure good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by selecting the pressure of compression to be equal to or greater than about 100 psi since it would have imparted sufficient compression to the layers in the fuel cell and ensured good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA

1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent No. 4,973,531 (Zaima).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 6 and Pratt is that Pratt does not teach of providing a material which expands to impart compression to the fuel cell as recited in claim 6.

Zaima teaches that it is known to incorporate additional dedicated fuel cell compression layers which, in impart compression in response to temperature elevation in the fuel cell (see prior art claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Zaima since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell.

14. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.U.S. Patent Application Publication No. 2002/0071984 (Dristy).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference betweens claim 3 and 6 and Pratt are that Pratt does not teach o compressing the active area at a pressure which is equal to or greater than about 100

psi (claim 3) or of providing a material which expands to impart compression to the fuel cell as recited in claim 6.

Dristy discloses providing a porous compressive element 64 which withstands and imparts a minimum compressive force of 100 psi to a polymer electrolyte fuel cell (paragraphs 43-46 as applied to both claims 3 and 6).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by selecting the pressure of compression to be equal to or greater than about 100 psi since it would have imparted sufficient compression to the layers in the fuel cell and ensured good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Applied to claim 3.

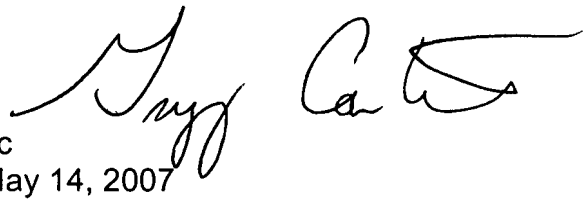
Furthermore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Dristy since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell. Applied to claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gc
May 14, 2007

Gregg Cantelmo
Primary Examiner
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